WHAT IS CLAIMED IS:

1. A method for treating an individual with non-small cell lung cancer comprising:

(a) selecting for treatment an individual who has non-small cell lung cancer, and

(b) administering to that individual, for a period of time, a MUC-1-based formulation, wherein said formulation comprises a liposome comprising at least one polypeptide comprising the amino acid sequence selected from the group consisting of the amino acid sequence of SEQ ID NO. 1, a variant of the amino acid sequence of SEQ ID NO. 1, the amino acid sequence of SEQ ID NO. 2, and a variant of the amino acid sequence of SEQ ID NO. 2.

2. A method for treating an individual with prostate cancer comprising:

(a) selecting for treatment an individual who has prostate cancer, and

(b) administering to that individual, for a period of time, a MUC-1-based formulation, wherein said formulation comprises a liposome comprising at least one polypeptide comprising the amino acid sequence selected from the group consisting of the amino acid sequence of SEQ ID NO. 1, a variant of the amino acid sequence of SEQ ID NO. 1, the amino acid sequence of SEQ ID NO. 2, and a variant of the amino acid sequence of SEQ ID NO. 2.

3. The method of claim 1 or claim 2, wherein the formulation further comprises at least one adjuvant.

4. The method of claim 3, wherein the adjuvant is selected from the group consisting of lipid A, muramyl dipeptide, alum, and a cytokine.

5. The method of claim 4, wherein the lipid A is monophosphoryl lipid A or a synthetic mimic of lipid A.

6. The method of claim 4, wherein the cytokine is interleukin-2.

7. The method of any one of claims 1 to 6, further comprising a step (c) evaluating the treated individual.

8. The method of claim 7, wherein evaluating the treated individual is performed: (i) before the period of time of step (b); (ii) during the period of time of step (b); (iii) after the period of time of step (b); or (iv) a combination thereof.

9. The method of claim 7 or 8, wherein evaluating the treated individual comprises measuring an immune reaction in the treated individual.

10. The method of claim 9, wherein measuring the immune reaction in the treated individual comprises measuring a T-cell proliferation.

11. The method of any one of claims 7 to 10, wherein evaluating the treated individual comprises determining at least one of: (a) tumor size, (b) tumor location, (c) nodal stage, (d) growth rate of the non-small cell lung cancer or prostate cancer, (e) survival rate of the individual, (f) changes in the individual's lung cancer or prostate cancer symptoms, (g) changes in the individual's PSA concentration, (h) changes in the individual's PSA concentration doubling rate, or (i) changes in the individual's quality of life.

12. The method of any one of claims 1 to 11, wherein the individual is diagnosed as having stage IIIB locoregional, stage IIIB malignant pleural effusion, or stage IV non-small cell lung cancer.

13. The method of any one of claims 1 to 12, wherein the formulation comprises a BLP25 liposome vaccine, wherein the BLP25 liposome vaccine comprises (i) a MUC-1 peptide comprising the sequence of SEQ ID NOs: 1 or 2, (ii) an adjuvant, and (iii) one or more additional liposomal lipids.

14. The method of claim 13, wherein the BLP25 liposome vaccine is provided in a kit.

15. The method of any one of claims 1 to 14, wherein the step of administering is by injection, aerosol, nasal delivery, or oral delivery, and wherein the injection is an intramuscular injection, a subcutaneous injection, intranodal, intratumoral, intraperitoneal, or an intradermal injection.

16. The method of any one of claims 1 to 15, wherein the period of time is selected from the group consisting of for at least about 2 weeks, at least about 4 weeks, at least about 8 weeks, at least about 16 weeks, at least about 17 weeks, at least about 18 weeks, at least about 19 weeks, at least about 20 weeks, at least about 24 weeks, at least about 28 weeks, at least about 32 weeks, at least about 36 weeks, at least about 40 weeks, at least about 44 weeks, at least about 48 weeks, at least about 52 weeks, at least about 60 weeks, at least about 68 weeks, at least about 72 weeks, at least about 80 weeks, at least about 88 weeks, at least about 96 weeks, or at least about 104 weeks.

17. The method of any one of claims 1 to 16, wherein the individual is treated with cyclophosphamide prior to (b).

18. A method for improving or maintaining the quality of life of an individual diagnosed with non-small cell lung cancer, comprising routinely administering to an individual diagnosed with non-small cell lung cancer a BLP25 liposome vaccine for a period of time, wherein the BLP25 liposome vaccine comprises (i) a MUC-1 peptide comprising the sequence of SEQ ID NOs: 1 or 2, (ii) an adjuvant, and (iii) one or more additional liposomal lipids.

19. A method for improving or maintaining the quality of life of an individual diagnosed with prostate cancer, comprising routinely administering to an individual diagnosed with prostate cancer a BLP25 liposome vaccine for a period of time, wherein the BLP25 liposome vaccine comprises (i) a MUC-1 peptide comprising the sequence of SEQ ID NOs: 1 or 2, (ii) an adjuvant, and (iii) one or more additional liposomal lipids.

20. The method of claim 18 or claim 19, further comprising calculating a combined score of the individual's physical well-being, functional well-being, and lung cancer or prostate cancer symptoms before, during, and after the period of time wherein the individual had been diagnosed with non-small cell lung cancer or prostate cancer.

21. The method of any one of claims 18 to 20, wherein the period of time

is at least about 6 months, at least about 12 months, at least about 18 months, at least about 24 months, or longer than 24 months.

22. The method of any one of claims 13, 18, or 19, wherein the dose of MUC-1 is about 1000 μg and the dose of adjuvant is about 500 μg.

23. The method of any one of claims 13, 18, or 19, wherein the amount of MUC-1 peptide is about 300 μg.

24. The method of any one of claims 13, 18, or 19, wherein the adjuvant is lipid A.

25. The method of claim 24, wherein the amount of lipid A is about 150 μg.

26. The method of any one of claims 13, 18, or 19, wherein amount of additional liposomal lipids is about 15 mg.

27. The method of any one of claims 13, 18, or 19, wherein the MUC-1 peptide comprises the sequence depicted in SEQ ID NO: 1.

28. The method of any one of claims 13, 18, or 19, wherein the MUC-1 peptide comprises the sequence depicted in SEQ ID NO: 2.

29. The method of claim 27, wherein the MUC-1 peptide is lipidated.

30. The method of any one of claims 1 to 11, wherein the individual is diagnosed as having stage IA, stage IB, stage IIA, stage IIB, stage IIIA, stage IIIB, stage IIIB locoregional, stage IIIB pleural effusion, and stage IV NSCLC-diagnosed patients or stage IV non-small cell lung cancer.